The utility of the plan laid out can only be judged by time. If the succeeding books are in keeping with the standard of the first volume it will prove of great use to the desiring, self-informing worker in his endeavor to keep abreast with the advances of theory and practice. The topics in the field of neurology are all carefully finished lectures and by representative men in their specialty. Space does not permit us to discuss them in detail.

THE STRUCTURE AND FUNCTIONS OF THE BRAIN AND SPINAL CORD. Victor Horsley, London. Charles Griffen & Co., 1892; pp. 223.

The book is a series of nine lectures given as the Fullerian lectures at the Royal Institution in 1891. Another series was given in 1892, and will, presumably, be published soon, while still a third is in prospect. This last series will deal with some results of research in physiological psychology. The second dealt with the more complicated portions of the central nervous system, as shown in the encephalon, while the lectures before us have to do with the spinal cord and ganglia alone. The initial lecture is historical and gives interesting extracts from Willis and some of his contemporaries, as well as a sketch of neurology from the earliest times. With the second chapter our author opens the discussion of the comparative anatomy and physiology of nervous structures by describing the reactions of protoplasm, the unicellular animals, coelenterata, echinodermata, crustacea, amphibia, etc.

We start with susceptibility to stimuli and more or less definite reactions. As we ascend the series the nervous system becomes more differentiated. Through the special sense organs the organism becomes more susceptible, through segregation of the tissues there comes subdivision in the reactions, or a form of localization. Through union of the central masses arises the possibility of that coördination of movements on which all refinement and effectiveness of motion depends. The reactions take the form of simple reflex, rhythmical and automatic responses. As low in the series as the medusa we are able to discover all the elements of the reflex, are as found in the higher forms. Each of these elements has then to be studied in detail, for they are capable, even in this simple condition, of suggesting all the fundamental problems involved. In describing the nerve fibres in chapter four, Gaskell's conclusions concerning the non-medullated fibres are introduced, and the results of his work are here and elsewhere brought out. Here, too, the bilateral representation of function is touched upon. The nerve cells of the spinal and sympathetic ganglia are next described, and the value of the nerve impulse as a reaction by which to investigate the more complicated structures is indicated. The next chapter deals with the physiology of the nerve fibre, including some statement of the experiments made to determine the changes in the nerve elements as the result of excitation. Here the conduction of the nerve fibre in either direction and the possibility of several impulses passing simultaneously in the same fibre are noted. The galvomometer shows that the nerve when excited directly produces a much stronger current than when excited through the medium of a nerve centre. By the method of recording the passage of the nerve impulse, the author in conjunction with Prof. Gotch has found that the excitation of the spinal nerve centres by way of the dorsal nerve-roots was conveyed up the cord in the dorsal half of that organ and not in the ventral. It also passed down the dorsal roots, as well as down and out by the ventral roots, the traditional and accepted pathway. When the ventral roots were directly excited, the impulse was not detected at higher levels of the cord, showing that there was a block in that direction. From these and other facts the author concludes that the source of nerve energy is on the *afferent* side of the nerve centre—a conclusion which does not appear to us justified in view of the recent finer anatomy of the cord.

He considers next the manner in which the nerve centres are aggregated in the cord and medulla. Taking the divisions of a limb from above downward, we find the proximal parts of the limb represented at the higher levels in the cord and the distal at lower levels—this so far as the motor centres are concerned. For sensation, however, no such nice localization can be made.

The last chapter deals with this arrangement of the cranial nerve in the medulla, and emphasizes the collocation there of the centres concerned in similar or associated functions. Finally, in examining the distribution of the impulses which ascend the cord—in the cat when a stimulus is applied at the caudal end—it was found that 80 per cent. of the impulses, as measured by the galvomometer, pass up the same side as that to which the stimulus is applied and the remaining 20 per cent. up the opposite side. Of those on the same side, 60 per cent. of the total pass by way of the dorsal and 20 per cent. by way of the lateral columns. Of those on the opposite side more than 15 per cent. pass by the dorsal, and a trace by the the lateral columns.

The book is valuable as a clear exposition of fundamental principles in neurology, and it is to be hoped that the companion volumes will soon be available.

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